Case Report

An Unusual Case of Bisalbuminemia in a 61-year-old Male Patient

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Bisalbuminemia is an uncommon protein aberration presenting with two distinct fractions of albumin on Serum Protein Electrophoresis. It reflects the presence, of a normal albumin and a modified albumin, in the same individual. Bisalbuminemia may be either hereditary or acquired. Hereditary type is permanent but the acquired form may be transient and is usually observed in diabetes mellitus, sarcoidosis, nephrotic syndrome, chronic kidney disease, multiple myeloma, Waldenström's macroglobulinemia and observed during treatment with beta-lactams. Here we are reporting the case of a 61-year-old male, who, is a patient of chronic kidney disease and diabetic and the electrophoresis performed on Capillary Electrophoresis revealed a bisalbuminemia. Through this work, we wish to present an uncommon case of bisalbuminemia in order to familiarize clinicians and laboratory personnel with this protein anomaly, to throw some light on its physiopathological and practical aspects.

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Bisalbuminemia or Alloalbuminemia is an uncommonly presented serum protein anomaly which may be acquired or inherited. It is characterized by the presence of double peak pattern of electrophoresis in the albumin fraction detected on Serum Electrophoresis. It can be seen as a bicuspid mountain with two albumin heads in densitometry scanning. These mutant albumins are also called Alloalbumins. They can be classified into either (slow type variants) or (fast type variants) depending upon their decreased or increased electrophoretic mobility[1]. The accumulative frequency of inherited Bisalbuminemia is typically 1:10000 to 1:1000[2-4], with an autosomal codominant inheritance[5]. Although there are no pathological or therapeutic implications in case of inherited bisalbuminemia, interest lies in finding out the characteristic functional differences in the protein, including altered protein binding affinity for thyroxine, steroid hormones and several dyes[6]. Acquired or transient Bisalbuminemia have been found to be associated with various conditions including Diabetes Mellitus, Nephrotic Syndrome, Chronic Kidney Disease, Sarcoidosis, Pancreatic Pseudocyst, Alzheimer's disease, Waldenström's Macroglobulinemia, multiple myeloma and also in patients receiving high doses of penicillin.

We recently encountered a case of a 61-year-old male patient, who has a chronic history of type 2 Diabetes Mellitus, Dyslipidaemia and Chronic Kidney Disease (Stage- III).

The patient was referred to our center to rule out any Monoclonal Gammopathy. Serum Capillary Electrophoresis by Sebia Capillary Electrophoresis System revealed no band suggestive of M-spike but

Editor's Comment :

- Bisalbuminemia is an uncommon protein aberration which may be hereditary or acquired. This may be an incidental finding or associated with co-morbidities like diabetes mellitus, sarcoidosis,nephrotic syndrome, chronic kidney disease, multiple myeloma, etc. Though bisalbuminemia does not influence disease process, it may be mistaken as an abnormal globulin peak while screening suspected or confirmed cases of monoclonal gammopathies. This entity must be kept in mind and then interpreted with caution.

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revealed a distinct bifid peak of Serum albumin zone.

A laboratory examination of other parameters revealed in Table 1.

We got the picture (Fig 1) on Serum Capillary Protein Electrophoresis.

So, in this case, we got an incidental finding of Serum Bisalbuminemia. Patient was ordered this test for the first time and therefore, we could not identify the nature of the Alloalbumin that whether it is an inherited or an acquired condition.

We suggested the patient to follow-up after 6 months to rule out any acquired aetiology of this condition as the patient has multiple co-morbidities which may be related to the acquired cause of this appearance of Alloalbumin.

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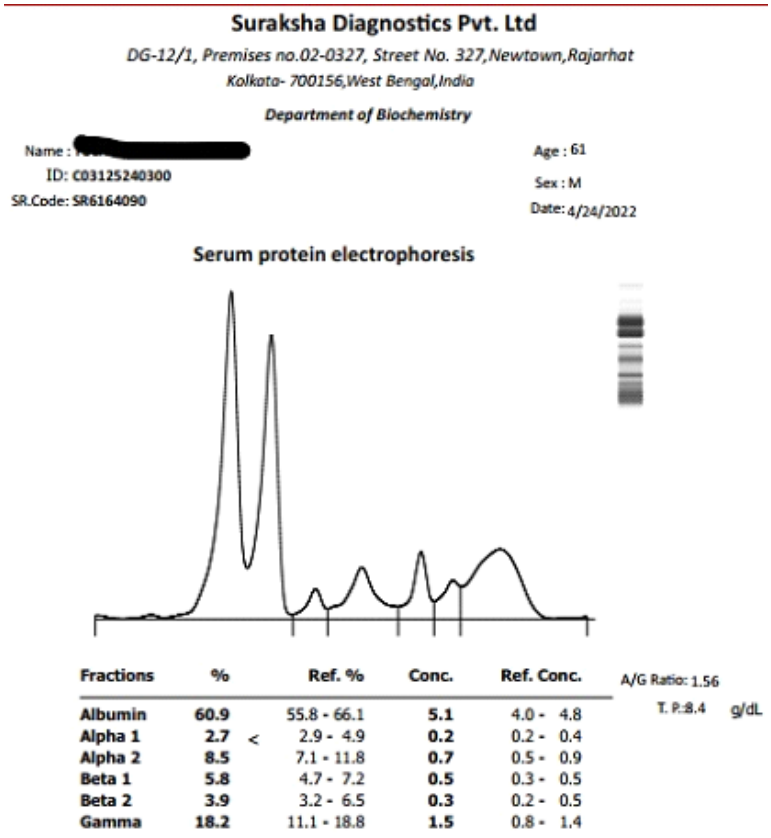

Fig 1 — Serum protein electrophoresis showing bifid albumin peak

Table 1 — *Results of the patient's biological assessment*

Parameters	Results	Biological reference Interval
Fasting Plasma Glucose	109 mg/dL	≤126 mg/dL
PP Plasma Glucose	169 mg/dL	≤200 mg/dL
Serum Creatinine	1.98 mg/dL	0.7-1.3 mg/dL
Serum Calcium	9.40 mg/dL	8.7-10.4 mg/dL
Serum Uric acid	5.9 mg/dL	3.5-7.2 mg/dL
Serum Phosphorus	4.5 mg/dL	2.4-5.1 mg/dL
HbA1c	7.4 %	≤ 6.5 %